SECTION B - SUPPLIES OR SERVICES AND PRICE/COST

0001	Scientific Engineering and Technical Support Services in Accordance with the Statement of Work (SOW) Section C.	1 LT	Est Cost Fixed Fee	$_____ $ _____
0002	Data in accordance with DD Form 1423 attached to this contract or to individual delivery orders issued under this contract	1 LT	*NSP	*NSP*
0003	Support Costs consisting of Materials and Travel inclusive of burden and/or G&A Only (No Fee)	1 LT	*NTE	$9,510,443.00
0004	Subcontracting inclusive of burden and/or G&A only (No Fee)	1 LT	*NTE	$6,000,000.00

Total Est Cost	$_____
Total Fixed Fee	**$**_____
CPFF	**$** _____
Total NTE-Support	$ _____
Total NTE-Subcontracting	$ _____
Total All Clins	$ _____

* NSP - Not separately priced, included in the cost of CLIN 0001.
** NTE - Not to exceed

Contract Type: This is an Indefinite Delivery/Indefinite Quantity, Cost Plus Fixed Fee (Completion) type contract which provides for the issuance of Delivery Orders during the period from date of award of the contract through sixty (60) months thereafter.

This Contract does not incorporate any options.

As referred to in paragraph (b) clause 52.216-22 entitled “Indefinite Quantity”, the contract minimum is a total of $100,000.00 worth of orders; the maximum quantity is the Total Amount for all CLINs. The maximum quantity is not to be exceeded without prior approval from the procuring Contracting Officer.

Note (1): CLIN 0004 provides for subcontracting effort not specifically identified at time of submission of the original proposal which may subsequently be required after contract award. Offerors proposing to team with subcontractors to meet the stated personnel requirements must include those subcontractor costs under the appropriate direct labor category and identify the number of hours to be provided by the subcontractor as part of the response for CLIN 0001.

The Government will provide GFE/GFM as may be required for performance of the services under this contract to the maximum extent possible.

appropriate direct labor category and identify the number of hours to be provided by the subcontractor as part of the response for CLIN 0001.

The Government will provide GFE/GFM as may be required for performance of the services under this contract to the maximum extent possible.

In accordance with FAR 22.605(a)(5) and Contract Clause 52.222-20, WALSH-HEALEY PUBLIC CONTRACTS ACT (DEC 1996) , as regards supplies and material under CLIN 0003, the contractor shall:

1) ensure that any material/hardware items, that cannot be obtained as GFE/GFM, are obtained from manufactures or regular dealers of these items in accordance with FAR 22.602.

2) obtain competition (items valued over $2,500.00) whenever possible and shall report to the contracting officer the extent of competition sought, obtained, and efforts to ensure future competition for materials/hardware.

SECTION C DESCRIPTIONS AND SPECIFICATIONS

STATEMENT OF WORK

1 INTRODUCTION

The Ship Signatures Directorate (Code 70) of the Naval Surface Warfare Center Carderock Division (NSWCCD) is responsible for development of stealth technology to support Navy submarine program goals. As part of its mission, Code 70 develops, operates and maintains major acoustic research and development (R&D) facilities at the NSWCCD Acoustic Research Detachment (ARD) located at Bayview, ID. Code 70 provides services and facilities to accomplish acoustic data acquisition and analysis in support of submarine R&D projects funded by the Naval Sea Systems Command (NAVSEA), other Navy and Department of Defense sponsors, and non-government organizations. Code 70 resources for R&D facility operations at the ARD include on-site staff and Carderock support. The objective of the technical efforts described in this statement of work (SOW) is to support NAVSEA, NSWC and Code 70 research and development programs and testing.

The major goal of this solicitation is to obtain high quality technical support at reasonable cost. This SOW has two major tasks. Task I covers Operation and Maintenance (O&M) of the Large Scale Vehicle, *KOKANEE*. This task is defined in Section 3 below. Task II, described in Section 4, covers engineering and technical support for ARD (and other) test facilities and capabilities and project support. Work will be accomplished in accordance with Delivery Order Tasks that are within the scope of Task I and Task II.

The Acoustic Research Detachment (ARD) develops, and maintains test facilities including acoustic ranges on Lake Pend Oreille, a large freshwater lake with depths exceeding 1100 ft. The facilities consist of large models and other specialized test hardware, several barges capable of being equipped with data acquisition and processing systems, shore based laboratories, and underwater ranges consisting of moored acoustic sensors and oceanographic instrumentation.

The detachment occupies a 23 acre facility located at Bayview, ID, including several remote shore stations, and has a resident government staff of approximately 55 engineering, scientific, technical, wage grade, and clerical personnel.

2 SCOPE

This SOW consists of two tasks: Task I -- LSV Vehicle and Related Systems Operation and Maintenance: and , Task II ARD and Project Support.

2.1 TASK I, LSV AND RELATED SYSTEM OPERATIONS AND MAINTENANCE

This task covers activities central to the operation, maintenance, and logistic support of *KOKANEE*, including hull, mechanical, electrical and command & control systems (HME&CC), data acquisition and recording systems, and other equipment and facilities employed in the utilization of the vehicle for R&D test and evaluation. Task I is specific to *KOKANEE* related systems. The product of Task I Delivery Orders is research and development data obtained during *KOKANEE* underway operations and other evolutions.

2.2 Task II, ARD AND PROJECT SUPPORT

Task II covers those activities necessary to the operation, maintenance, and logistic support of other vehicles, data acquisition systems, and facilities employed in research, development, test and evaluation (RDT&E) at the detachment and other sites. Task II is not specific to any particular vehicle in the current or future inventory at the detachment. The product of Task II Delivery Orders will vary depending on the specific project. The scope of Task II includes *KOKANEE* support not covered under Task I, such as special installations, modifications, and upgrades. The scope of Task II includes activities relating to facilities management; infrastructure maintenance and preservation at the site; fabrication of new models and data acquisition systems; fabrication and installation of underwater instrumentation systems; and data processing, archiving and reporting.

The following list includes representative models and facilities that may be supported under Task II:

- Large Models: *KOKANEE*, CUTTHROAT, KAMLOOPS, DOLLY VARDEN, STEELHEAD, S6W, PIKE, WHITEFISH
- Floating platforms (including Yellow Barge, Green Barge, Model Support Platform (MSP), and various barges and boats)
- Shore facilities (including Wigwam, OUTPOST, Model Engineering and Support Facility (MSEF), and other labs and buildings
- Test labs and systems (including Guidance Navigation and Control (GNC), On-board Data Acquisition System (ODAS), Data Processing System (DPS), Radiated Noise Data Acquisition and Analysis System (RNDAAS), Buoyant Vehicle noise lab and Intermediate Scale Measurement System (ISMS))

3 TASK I, LSV AND RELATED SYSTEM OPERATION AND MAINTENANCE

3.0 BACKGROUND AND GENERAL TASKING

The contractor shall provide engineering, technical and related services and material to accomplish delivery order tasks within the area of LSV and related system operation and maintenance.

3.0.1 GENERAL

This section defines the operation and maintenance of the Large Scale Vehicle (LSV-1), *KOKANEE* and associated support and data systems. *KOKANEE* is an unmanned, self -- propelled, 1/4 -- scale submarine, that is approximately 10 feet in diameter, 90 feet long and displaces 150 tons submerged. The *KOKANEE* mission is to support hydrodynamic, acoustic, and structural Research, Development, Test and Evaluation (RDT&E) of subsea technology for the Navy.

The ARD is responsible to Naval Surface Warfare Center and the Naval Sea Systems Command to maintain and operate *KOKANEE*, integrate user programs onto the *KOKANEE*, and to successfully accomplish trial operations. Operations are based at the Acoustic Research Detachment, Bayview, Idaho.

The contractor shall support the following systems:

- the *KOKANEE*, including all HME&CC equipment necessary to operate the submarine on the test range. This includes the Acoustic Tracking and Communication System (ATACS) equipment on the vehicle and

on the range, and the data recording and reduction required to examine vehicle HME&CC performance during trials

- the support facilities required to accomplish operations, maintenance and integrated logistics support (ILS). These include all program assets, including the 18-foot, 22-foot, 25-foot Boston Whalers, Avon runabout, the *KOKANEE* Tender, Radiated Noise Barge (RNB), and the LSV Support Barge (LSVSB)
- RNDAAS, including any and all equipment necessary to acquire, process, store, download and analyze *KOKANEE* radiated noise data
- ODAS including all equipment on *KOKANEE* used to acquire, process, store and download requisite trials data
- DPS which includes all equipment required to strip, store and process all analog and digital data recorded on the ODAS System. This includes all off-line data reduction facilities for post-processing and conducting post-run analysis of trial data

3.0.2 *KOKANEE* SCHEDULE

The *KOKANEE* Schedule consists of three levels as presented in reference (I):

1) a multi-year, **Long Term Utilization Schedule** for sequencing project trial requirements and major maintenance period
2) a **Trial Schedule** showing the best estimate of underway days and configuration changes (NOTE: reference (I) shows a **KOKANEE annual trial schedule**. These are normally prepared trial by trial) and
3) a **Daily Execution Schedule** that shows all operations and maintenance tasks.

3.0.2.1 *KOKANEE* LONG TERM UTILIZATION SCHEDULE

The ***KOKANEE* Long Term Utilization Schedule** consists of a multi-year timeline including planned test periods for specific trials, and other dedicated availability periods. This is determined during formal scheduling conferences held by NAVSEA.

3.0.2.2 *KOKANEE* TRIAL SCHEDULE

The **Trial Schedule** shows, in greater detail, the intended configurations and underways to complete the trial objectives. The **Trial Schedule** becomes a requirement of the program as it defines the condition of the *KOKANEE* and all Support Facilities required for a successful trial. The *KOKANEE* Chief Engineer (KCE) or his representative will periodically provide the ***KOKANEE* Trial Schedule** to the contractor both in hard copy and media (Microsoft Project Scheduling software). The KCE will distribute changes as soon as is practical and, in general, no less than 24 hours prior to a scheduled underway.

Scheduled underways may be canceled at anytime. The contractor shall complete all preventive maintenance, repairs and underway preparations to support the schedule.

3.0.2.3 *KOKANEE* Daily Execution Schedule

The ***KOKANEE* Daily Execution Schedule** defines the major events, supporting details and their sequence for all Task I and *KOKANEE* test project work. This includes definition of the vehicle configuration, underway evolutions, all maintenance and any additional support requirements that are required as a result of the specific trial objectives. The contractor shall prepare this schedule daily for the work coordination meeting. The **Daily Execution Schedule** will be implemented under the direction of the KCE. The contractor's chain of authority shall include personnel directly responsive to the KCE for the conduct of operations and maintenance.

3.0.3 WORK DAY/WORK WEEK

The *KOKANEE* operating cycle will routinely require second and third shift work to support on-lake trials. The maintenance support shall be accomplished between operations. Second and third shifts (1530-2330 and 2330-0730) and weekends will not normally be scheduled to accomplish maintenance and repairs unless *KOKANEE* experiences a critical failure that requires dedicated attention.

3.0.3.1 WORK DAY

The *KOKANEE* Daily Execution Schedule will define the start of the normal workday. Workday start is normally driven by user requirements for installation and configuration changes. The end of the workday will be the later of

- the scheduled end of the work-day as defined by the *KOKANEE* Daily Execution Schedule, or
- until *KOKANEE* is shut down after an operation in accordance with reference (B)

The start of the workday may be shifted from the nominal 0700 to any other time to accommodate trial requirements

3.0.3.2 SATURDAY/SUNDAY/HOLIDAY WORK

Saturday work will normally only be scheduled for critical-path maintenance, or installations required to support the next underway or operational event. Underways on Saturdays will not normally be scheduled, but may be required depending on operational criticality. Work will not normally be scheduled for Sundays or Holidays. The only maintenance required on Sundays or Holidays will be remedial action as a result of critical failures.

3.0.4 FUNCTIONAL RELATIONSHIPS

Within the ARD, the LSV Program reports to the Detachment Director as shown in Chart I. The Kokanee Chief Enginer (KCE) coordinates all O&M activities, and is responsible for schedule, technical issues, and resolution of questions, including those relating to support functions provided by this contract via the Contrating Officer’s Representative.

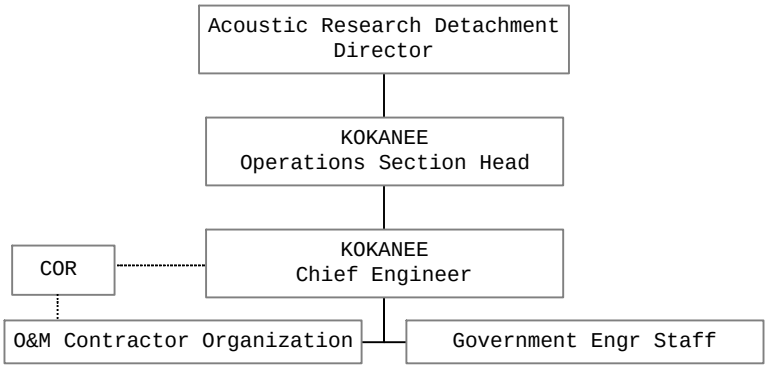

Chart I
Administrative Organization, LSV Operations and Maintenance

Two subsets of the administrative organization include on-lake, or underway, Operations and inport maintenance. The reporting organization and duties are shown in Charts II and III and described below.

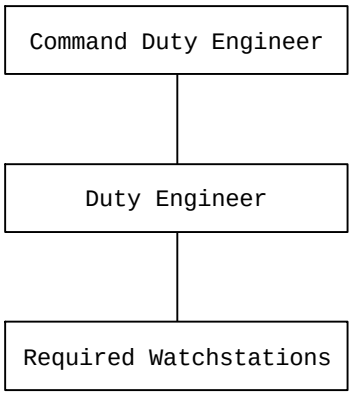

Chart II
Underway Watch Organization

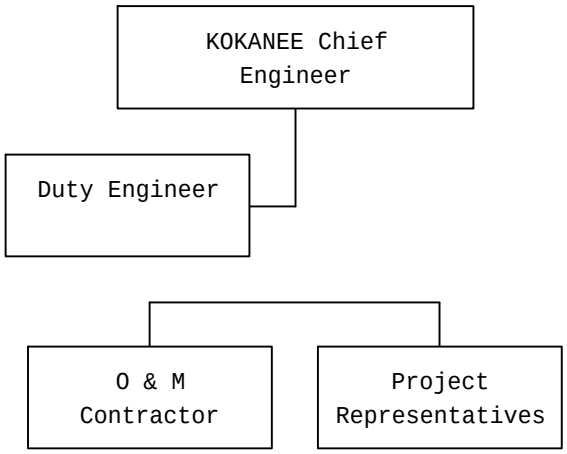

Chart III
Inport Maintenance Organization

3.0.4.1 *KOKANEE CHIEF* ENGINEER(KCE)

KOKANEE operations will be under the control of the KCE. The KCE has been assigned specific responsibility for *KOKANEE* operations, maintenance, safety and on-lake trial execution by the Commander, Carderock Division, NSWC. The KCE will schedule and review accomplishment of all tasks associated with *KOKANEE* O&M. In addition, the KCE will adjudicate conflicts for space, timing or the specifics of tasks. He is supported by a staff of government engineers for the conduct of on-lake operations and in-barge maintenance. The operational organization is shown in Chart II:

3.0.4.2 *KOKANEE* COMMAND DUTY ENGINEER(CDE)

The *KOKANEE* Command Duty Engineer (CDE) is an oversight government position that will be manned by LSV government crew members upon meeting specific qualifications. The KCE may serve as the CDE. The CDE is the government LSV crew member responsible for all aspects of *KOKANEE* safety and test execution during on-lake tests. The CDE reports to the KCE.

3.0.4.3 *KOKANEE* DUTY ENGINEER (DE)

The *KOKANEE* Duty Engineer (DE) is also a government position that will be manned by LSV government crew members upon meeting specific qualifications. During on-lake tests, the DE executes specific procedures in the preparation, initial dive, test conduct and surfaced recovery of *KOKANEE*. He reports to the CDE. In port, the DE also serves as the Chief Engineer's agent to execute the daily schedule of maintenance and tests.

3.0.5 CONTROL AND DATA ACQUISITION SYSTEMS

KOKANEE operates with several on-board computers and data systems as part of the GNC suite, the ODAS, the DPS, and the RNDAAS. The daily operation and routine maintenance (most hardware PMS and data backups) of these systems is under the scope of SOW Task I. Maintaining, evaluating and changing *KOKANEE* system software, data handling routines and system performance upgrades is under the scope of Task II.

Software maintenance and development is performed by the ARD systems engineering team (SET). The SET also has similar responsibilities for several other complex high performance computer control, data acquisition and processing systems not associated with *KOKANEE*. The SET will provide *KOKANEE* software in coordination with the KCE. Software will be developed, in most cases, in an off-hull development lab and fully tested prior to implementation. Operator training will be provided by the SET. The contractor will operate control consoles, load software and operate systems using the delivered software.

GNC and ODAS sensors and hardware fall under the scope of section 3.1, *LSV Vehicle and Support System O & M.* Data system equipment is under the scope of section 3.2 *LSV Data System O&M.*

3.1 LSV VEHICLE AND SUPPORT SYSTEMS OPERATION AND MAINTENANCE

The scope of this task includes basic operation and maintenance of *KOKANEE* and *KOKANEE* support facilities.

3.1.1 VEHICLE OPERATIONS.

The CDE will direct operations of *KOKANEE* for all evolutions. The CDE will be assisted on-lake by the DE. The contractor shall support *KOKANEE* operations in accordance with reference (B) and the ***KOKANEE* Daily Execution Schedule**. The operations cycle includes pre-underway checks; the on-lake operation and post run checkouts and battery charge. The nominal operating tempo for planning purposes is defined in Section 3.1.1.2.

Operational support includes: completion of all maintenance and repairs, conduct of pre-underway checks, repair or correction of any deficiencies discovered during pre-flights, operating systems on-lake, transferring and reducing data and conducting post operations checkout and battery charge. In addition, the Ship Control Computer (SCC) and ATACS consoles are manned during operations.

NOTE: The actual schedule of operations may vary widely depending on the project requirements and ongoing maintenance.

3.1.1.1 REQUIRED WATCH STATIONS.

The contractor shall man the watch stations listed below with personnel of sufficient numbers and experience to ensure safe, effective conduct of docking, undocking and underway evolutions. Watch station personnel shall complete qualifications in accordance with the LSV qualification requirements of references (B) and (G) prior to their assignment. When conducting a range operation, all range personnel shall attend the pre-underway brief. This brief will be held just prior to every underway. This includes all personnel scheduled to provide shift rotation after *KOKANEE* has departed the LSVSB (because lake operations are nominally 6 to 12 hours, it is desired that the contractor schedule shift changes at or near the underway times). Normally, shift changes will not be executed while the *KOKANEE* is on the lake.

3.1.1.1.1 RNB and TENDER Pilots and Small Boat Coxswains. All coxswains and pilots shall be responsible for the safety of their craft and embarked personnel and will remain at the helm during all underway periods. All coxswain and pilots shall take operational commands from the *KOKANEE* CDE during trial periods.

Underway operations require the following craft on the lake simultaneously:

- The RNB
- The LSV Tender with LSV alongside
- 25' Range Support Boat
- 22' Range Support Boat
- Avon Inflatable boat

3.1.1.1.2 SCC Operator. This station, located on the LSV Tender, shall be manned continuously while umbilical or modem communications are in process or expected.

3.1.1.1.3 ATACS Operator. The ATACS operator shall maintain his watch at the ATACS control terminal whenever the LSV is under autonomous control or when designated by the *KOKANEE* CDE.

[The SCC and ATACS operators shall take operational commands from the *KOKANEE* CDE during range operations.]

3.1.1.1.4 Additional Watch stations. The contractor shall man additional watch stations (such as line handlers, release and recovery crew, boat drivers, equipment operators) required to execute operations in accordance with reference (B).

3.1.1.2 OPERATING TEMPO

The contractor shall support a **nominal** operating tempo of three underways every two weeks. When maintenance periods are included, the annual tempo of operations is approximately 60 attempts to complete 50 underways along with dedicated maintenance periods. The actual operating tempo will vary due to the requirements to accomplish maintenance, to conduct lake trials, to accomplish battery charges, or to make up for

lost-time in the schedule due to emergent failures or other programmatic constraints. The contractor is, however, required to support all operations in accordance with the ***KOKANEE* Annual Trial Schedule**.

3.1.1.2.1 Subsequent Underways

Subsequent underways are defined as underway operations two days in a row. Subsequent underways shall be anticipated, planned for and supported by the contractor as a result of *KOKANEE*, support facilities, ODAS, and RNDAAS system casualties, weather /ambient conditions which prohibit a successful test on range or other operational requirements. Emergent failures that take longer than one day to repair will be pursued such that the underway can be accomplished as soon as possible.

3.1.1.2.2 Night Operations

Underway times from the LSVSB are subject to change, but are frequently scheduled approximately one hour prior to sunset. This time is selected to provide quiet ambient noise conditions in support of trial requirements. These underway times may shift due to test requirements, weather, system availability, or growth in private or commercial activity on the lake, and for other reasons. Night operations in the winter or in foul weather require special safety considerations with regard to personnel preparedness and protection. The contractor shall assess weather and night considerations, determine the need for additional personnel if required to ensure safety of range operations, and manage his staff to meet underway requirements.

3.1.1.3 OPERATIONAL SAFETY.

The contractor shall ensure operational safety requirements of references (B), (E) and (G) are met and implemented. These requirements include: personal protective equipment (PPE), operations over water, foul weather operations, cold weather operations, use of chemicals, industrial health and safety and use of weight handling equipment. The contractor shall use these references to manage personnel to accomplish operational support work. Personnel safety shall always take precedence. Whenever conducting operations, the contractor shall identify underway personnel to the *KOKANEE* CDE verbally prior to every underway. Equipment safety, including *KOKANEE*, is the next highest priority. Throughout the underway the contractor shall continually assess the conditions of weather and any other abnormal configuration of the vehicle or facilities, and the impact, if any, on his ability to safely support the release of the vehicle. The contractor is responsible to immediately identify to the *KOKANEE* CDE any issue on safety that the contractor becomes aware of.

3.1.1.4 OPERATIONAL REPORTS AND RESPONSIBILITY.

Prior to getting *KOKANEE* underway from the Support Barge, the contractor shall provide written assurance to the CDE or *KOKANEE* Chief Engineer of his ability to support operations. The contractor's report shall be in the form of a letter or Memorandum and shall:

- document vehicle readiness to support the scheduled test including
  - closure of all Re-entry Control (REC) maintenance procedures
  - list of overdue maintenance
  - ODAS and GNC are properly configured

- summarize the contractor's concerns about weather, list any facility or support craft material limitations to conducting the planned test
- state that the number and training of assigned personnel are adequate
- state plans to ensure the alertness and safety of the staff
- state any additional concerns regarding the operation and the steps taken to alleviate the concerns

If the contractor anticipates not being able to safely support the release of *KOKANEE*, he shall identify this condition to the *KOKANEE CDE* as soon as possible. If not released due to contractor assessment, the vehicle will be returned to port. After docking *KOKANEE*, the contractor shall develop and formally submit his reasons for being unable to support release and his intended action to remedy the problem. The KCE shall review and, if acceptable, approve the contractor's intended action. Upon approval, the contractor shall complete the action and report the results to the KCE.

Should any incident occur, or issue arise, which risks safety of personnel, the *KOKANEE* or Support Facilities, or the environment, the contractor shall:

- investigate the situation, particularly his involvement or observations
- formally submit his findings and proposed remedies to the KCE
- execute remedies, after government review and approval

When *KOKANEE* is on the lake the *KOKANEE CDE* shall make operational decisions. The decisions and guidance provided by the *KOKANEE CDE* shall be strictly followed and shall not be arbitrated; any emergent issue can be resolved with the *KOKANEE* Chief Engineer, COR, or the Contracting Officer when in port.

3.1.1.5 VEHICLE HEALTH MONITORING DATA.

Upon return to the surface or in the LSVSB, the contractor shall reduce and distribute GNC recorded data to engineering units in accordance with reference (B). The contractor shall maintain records in accordance with references (B) and (C). The following facilities required for data acquisition, data storage, and GNC data reduction will be made available at the ARD: - the *KOKANEE* vehicle and all in-situ equipment currently used for data recording.

- access to a secure data reduction computer with data reduction software and documentation already in residence and operating (or an equivalent system)
- secure storage container located on the LSVSB

3.1.2 VEHICLE AND RELATED SYSTEM MAINTENANCE

The contractor shall maintain the *KOKANEE*, support craft and support facilities to ensure that these systems are available to support the ***KOKANEE* Annual Trial Schedule**. The contractor shall support each maintenance period with quality, complete, and timely work conducted in an auditable manner in accordance with the maintenance and quality assurance requirements of this statement of work and references (A), (B), (C), (H), (M), (Q), (R), (S) and (W).

Vehicle maintenance is scheduled on the ***KOKANEE* Daily Execution Schedule** which is maintained by the contractor. Progress and status are discussed daily at a work integration meeting held by the KCE. The *KOKANEE* DE coordinates the daily conduct of maintenance by authorizing commencement, approving tagouts, witnessing testing and scheduling any emergent maintenance or project work.

The inport maintenance organization is shown in Chart III.

The contractor shall execute the following:

3.1.2.1 PMS.

Perform all preventive maintenance (PMS) as prescribed by the Maintenance Data System (MDS) of reference (C). The contractor shall use approved procedures and periodicities, nominally provided by reference (C), approved drawings, and other supporting documentation to conduct this task. If a maintenance requirement emerges where approved procedures have not been provided in reference (C), or provided procedures or periodicities require updating, the contractor shall use the available information and/or acquire information from the appropriate procedural improvements and submit for approval to support schedule operations.

Maintenance support shall include, but not be limited to:

- preventive maintenance and operational checkout of equipment
- calibrations and alignments
- configuration changes
- lead ballast management
- corrective maintenance (due to equipment malfunction) (document repairs in accordance with references (C) and (R)
- development of a systematic approach to maintenance
- rubber and coatings applications to the vehicle
- maintenance to support component level test requirements for any system(s) within the *KOKANEE*, Support Facilities, or On-board Data System
- servicing utilities and accesses
- certifying component spares integrity
- staging of component spares in preparation for maintenance, and
- janitorial services

3.1.2.2 PERIODICITIES.

Review maintenance periodicity and recommend changes.

3.1.2.3 REPAIRS.

Complete all repairs to return systems to operational status. Reference (R) provides sample annual repairs.

3.1.2.4 SPECIAL MATERIALS AND WELDING.

Accomplish all rubber and special material (coating) application and removal. Also, conduct non-pressure hull welding.

3.1.2.5 LOGISTICS.

Provide logistics support for *KOKANEE* and support systems in accordance with references (A) (C), (M), (Q), and (S) . This includes:

- preparing requisition ordering documents
- accomplishing inventory and receipt control, record keeping, storing and issuing requisition, warranty, and other material documentation
- configuration control and administration and
- review of inventory (quantity and usage) and recommend changes to on-hand material to support the ***KOKANEE*** **Annual Trial Schedule** (i.e. Restricted Availabilities (RAV), long periods of operations). References (A) and (C) require positive material control and "pedigree" for controlled material.

3.1.2.6 AUDITS.

Conduct internal self-audits of re-entry control (REC), tagouts, and work control practices in accordance with references (A), (B) and (C). The contractor shall provide an audit plan to document internal audits.

3.1.2.7 FAILURES.

Identify to the KCE all emergent failures or maintenance requirements that will place any system in-operable. The expected down time and the contractor's plan to restore capability shall be reported.

3.1.2.8 PLANNING.

Support the daily work planning meetings with the ***KOKANEE*** **Daily Execution Schedule** of all work to be accomplished (Core maintenance and Project items) [NOTE: this is the same requirement of section 3.0.2.3]

3.1.2.9 TRIM.

Execute the *KOKANEE* trim control program as described in reference (W). Establish and execute procedures to account for wet and dry weight changes, lead and variable (water) ballast adjustments. Provide a written weight report prior to each underway.

3.1.2.10 CONFIGURATION.

Maintain configuration documentation in accordance with reference (C). A record copy of all configuration changes shall be kept onsite. The contractor shall prepare and submit Engineering Change Documents.

3.1.2.11 SENSORS.

Maintain the baseline noise sensors for the ODAS in operational condition and calibrated IN ACCORDANCE WITH references (U) and (V).

Section 3.1 Data requirements summary:
3.0.2.3 Daily Execution Schedule
3.1.1.4 Report on Ability/inability to support Operations
3.1.1.5 GNC Data
3.1.1.5 GNC Data Records
3.1.2.2 Recommendations to maintenance periodicity

3.1.2.5 Requisition Documents
3.1.2.5 Inventory, receipt control, record keeping
3.1.2.5 Sponsor Owned Material listing
3.1.2.6 Audit Plan
3.1.2.7 Failure report
3.4.2.8 Daily Execution Schedule (same as 3.0.2.3)
3.1.2.9 Weight Report
3.1.2.10 Configuration documentation, ECPs

3.2 LSV DATA SYSTEM OPERATIONS AND MAINTENANCE

Data systems provide the ARD's most useful product--namely, accurate, reliable, trusted acoustic and non-acoustic data for evaluating research and development projects tested on large models. In this regard, operation of complex, inter-related systems must be formalized and documented such that any and all aspects of data acquisition and system configuration can be reviewed and evaluated. The focus of data systems operations is, then, configuration of the system to support specific trial objectives; documentation of the configuration and creation of a data package able to support post trial analysis and scrutiny. Maintenance will focus on reliability and availability of the current system, calibrated signals, documented system performance, redundant data, and timely processing. The data systems are described below.

The contractor shall conduct all maintenance and repair necessary to support the ***KOKANEE*** **Annual Trial Schedule** (see Section 3.0.2) and other data acquisition and processing requirements.

3.2.1 DATA SYSTEM OPERATIONS

The contractor shall operate the LSV data systems in support of the ***KOKANEE*** **Annual Trial Schedule** requirements. For all data systems, the contractor shall:

- Ensure all equipment is functionally ready to support customer requirements, including ordering of consumable materials
- Conduct and evaluate pre-run system electrical calibrations (reference (K))
- Troubleshoot and correct any system problems that effect the ability to support underway data requirements
- Properly mark and store all classified data in accordance with reference (F

The contractor shall assist the government by making recommendations to resolve emergent technical or operational problems prior to and during an LSV operation. Specific system requirements are detailed below.

3.2.1.1 RNDAAS OPERATIONS

The RNDAAS is composed of ten interconnected subsystems that provide primary functions of acoustic vehicle tracking, analog acoustic data acquisition and recording, digital data acquisition, one-third octave band processing, narrowband processing, and a multitude of display and analysis functions. The subsystems are:

- Hydrophone Arrays Subsystem (HAS)
- Signal Conditioning and Calibration Subsystem (SCS)
- Signal Recording Subsystem (SRS)

- One-Third Octave Band Subsystem (OTO)
- Narrowband Processing Subsystem (NPS)
- Digital Acquisition and Processing System (DAAPS)
- Tracking and Control Subsystem (TAC)
- Radiated Noise Analysis Subsystem (RNAS)
- NSWC Acoustic Analysis and Vibration Data Analysis System (NAVDAS)
- Shared Resource Management Subsystem (SRM)

This suite of equipment is fully described in reference (N).

The RNDAAS is primarily utilized to collect radiated noise data from the *KOKANEE*. The RNDAAS is utilized for these runs as needed by the customer requiring radiated noise data. The contractor shall prepare the RNDAAS, acquire and process data, and assist in the evaluation of data quality for these underways. The RNB will typically depart the ARD for the LSV test range 2-3 hours prior to the departure of *KOKANEE*. Radiated noise data is acquired for customers at all times of year.

3.2.1.1.1 On-lake Operational Support

The contractor shall:

- Coordinate the RNDAAS acquisition operation with that of the LSV vehicle operations while on range
- Ensure all systems are fully operational, properly configured and ready for the operation
- Operate the RNDAAS described in reference (N) during data acquisition
- Process and perform Quality Control on acoustic and track data for each run using the RNDAAS

3.2.1.2 ODAS OPERATIONS.

The ODAS consists of equipment listed in reference (T). The contractor shall ensure that

- all required ODAS pre-mission checks are performed
- the baseline sensors are operational, and
- the ODAS system is properly configured for autonomous on-range operations

Following range operations, the contractor shall ensure that all the on-board data is properly downloaded from the LSV, and that all applicable data is available for processing and analysis. The contractor shall generate and maintain all associated ODAS databases and support files necessary to conduct ODAS system operations.

The nature of ODAS computer operations is for operators to manipulate the system using support files, script files and other utilities. Software programming to change performance of the system is not included.

3.2.1.3 DPS OPERATIONS.

The DPS consists of equipment listed in reference (L). The DPS operators shall perform all necessary stripping, general processing, and post processing of *KOKANEE* on-board data as recorded on both the ODAS digital and analog recording systems. Normally, this processing will commence as soon as the data becomes available following a *KOKANEE* test sequence and subsequent ODAS data download. Direct on-lake support is not normally required with the DPS system. All processed baseline on-board data will be quality checked and discrepancies documented within 24 hours from the time the data have been stripped from tape. A quick look

baseline sensor data assessment will be required within 12 hours of receipt of tapes following a *KOKANEE* underway in order to support critical sensor repair prior to the next *KOKANEE* operation. This report shall be made to the KCE.

3.2.1.4 DATA SYSTEM WATCHSTATIONS.

The contractor shall man the following watch stations during radiated noise data acquisition operations and Data Processing System onboard noise processing periods with personnel of sufficient number and experience to ensure safe, effective and efficient performance.

a. RNDAAS Acoustics Engineer. This position shall

- Perform acoustic engineering calculations such as range adjustments, propagation loss, filter settings, equipment response, system transfer functions, cable line loss, and amplifier gains for equipment parameters as part of pre-underway setup
- Determine system parameters and settings (i.e. gains to ensure acquisition within subsystem's dynamic range) necessary to ensure successful data acquisition
- Evaluate and correct emergent system problems
- Perform quality control of acoustic data collected during the underway
- Document any system problems or configuration changes that occur during the underway evolution
- Assist the Track Control Console (TCC) operator(s) in system operation during the underway.
- Set up and checkout of the RNDAAS in preparation for on-line data acquisition in accordance with references (N) and (O)

b. TCC operator(s). This position shall:

- Set up the RNDAAS to support data acquisition following reference (O)
- Assist in evaluating and correcting emergent system problems
- Operate the RNDAAS to acquire data during the underway
- Edit and perform quality checks on the acoustic track data following acquisition
- Process all required acoustic and track data

c. DPS Operator. This position is responsible for operating the DPS in support of LSV trial operations. The DPS operator is located in the DPS Lab onboard the LSVSB. Specifically, the data systems operator shall:

- Strip ODAS tapes from the recorded format to the archive format
- Perform narrowband processing (FFT's)
- Develop time series plots for all sensors
- Develop one-third-octave (OTO) plots and other special processing
- Conduct system and data back up procedures
- Identify urgent system maintenance requirements

3.2.2 DATA SYSTEM MAINTENANCE.

Data system maintenance shall focus on keeping the current configuration of hardware and software operational, documented and ready to support data acquisition and processing. [NOTE: This focus is as opposed to

defining upgrades, programming system improvements and manipulating system performance.] In this regard, maintenance emphasis is on reliable, predictable, repeatable system performance. The contractor shall maintain the LSV data systems to ensure they are available to support operational data acquisition requirements as well as post-operational needs of data customers.

3.2.2.1 PMS.

The contractor shall conduct all PM as defined in references (C), (N) and (Y). The contractor shall report to the government any PM checks or work action that produces results that are indicative of equipment failure or will cause a reduced capability or performance. The contractor shall review maintenance periodicity and recommend changes.

3.2.2.2 REPAIRS.

The contractor shall complete all repairs and corrective action to return systems to operational status; track all casualties and associated corrective actions in accordance with references (C) and (Y); and ensure all ODAS baseline sensors, listed in reference (U), are operational and calibrated.

3.2.2.3 LOGISTICS.

The contractor shall provide logistics support for LSV data systems and associated support systems in accordance with references (C), (M), and (S). This includes:

- Preparing requisition ordering documents
- accomplishing inventory and receipt control, record keeping, certification documentation, storing and issuing
- maintaining system technical documentation and operational and maintenance procedures
- configuration control and administration and
- review of inventory (quantity and usage) and recommend changes to on-hand material to support the ***KOKANEE*** **Annual Trial Schedule**

3.2.2.4 CONFIGURATION CONTROL.

The contractor shall accomplish routine configuration control tasks such as: annual updates of the Design Certification Baseline Report (DCBR) and configuration baseline, equipment audit reports, maintaining documentation. These are described in references (C), (L) and (Y).

3.2.2.5 INVENTORY.

The contractor shall conduct annual inventories of all Data System equipment.

3.2.5.6 BASELINE CAPABILITIES.

The contractor shall maintain the capability to generate and update, as necessary, all Data System related script and system support files including all system device drivers, configuration files, operational script files, sensor databases, etc. These are described in references (K), (N), (T), (U), (V) and (X).

Section 3.2 Data requirements Summary
3.2.1 Mark Classified Documents
3.2.1.3 Report of sensor data (sensor hit list)
3.2.1.4 Document system problems or changes
3.1.2.4 Urgent system maintenance requirements
3.2.2.1 PM failures
3.2.2.3 Requisition documents
3.2.2.3 Changes to inventory
3.2.2.4 DCBR
3.2.2.5 Inventory report

4 **TASK II, ARD AND PROJECT SUPPORT**

The contractor shall provide engineering, technical and related services and material to accomplish Code 70 project support under delivery order tasks within the following six general areas:

- test support
- instrumentation support
- engineering design and system development
- data acquisition, processing and analysis
- facility, test fixture, model and system support; and
- special analyses

Some delivery order tasks will involve performance of ARD support activities on-site at Bayview. The contractor shall nominally support activities at the ARD 8-12 hours per day, six days per week. However, acoustic tests requiring data acquisition with on-lake facilities are usually conducted at night, particularly during the summer months. As needed, the contractor shall be required to support night and 24-hour per day operating schedules, including Saturdays, Sundays, and Holidays. Specific requirements will be identified in individual delivery orders.

The ARD Administrative Organization for Task II Delivery Orders will include a technical point of contact (TPOC) who will answer technical, schedule and other questions related to the task.

4.1 TEST SUPPORT AREA

Under this area, the contractor shall accomplish the following types of support:

- hardware and software development
- configuration of facilities and test platform configuration and assembly of instrumentation into integrated measurement systems
- transport and handling of material, hardware, and vehicles to facilities and test ranges
- operation of propulsion systems such as diesel or gas powered out drives, and electrical power systems such as diesel or gas turbine electrical generators and their associated power distribution systems
- operation of cable handling systems
- operation of rigging equipment

- plan and coordinate technical and engineering services required for test execution
- setup and operation of the measurement system required for data acquisition
- conduct of system calibration and certification
- provide recommendations to resolve any technical or operational problems
- categorize, file, document and store test results
- support testing at the buoyant vehicle and other ranges
- operate work and personnel transfer boats during test preparation and execution
- similar test support in other areas, and
- other test support.

4.2 INSTRUMENTATION SUPPORT AREA

Under this area, the contractor shall accomplish the following types of support:

- develop and implement preventive maintenance (PM) plans and procedures
- develop repair procedures and plans
- conduct PM and repairs
- establish and maintain maintenance records
- establish preventive maintenance schedules
- maintain configuration management documentation on equipment and its operational status
- establish and maintain a method of inventory and stock control for consumable supplies, materials, and spare parts
- identify material stocking requirements
- identify suppliers and prepare specifications for government material procurement
- maintain status on ordered material
- conduct receipt inspections and configuration management audits on new and repaired equipment
- prepare and package equipment for shipment
- develop, maintain, and execute an instrumentation calibration program
- develop and implement instrumentation certification procedures, and
- other instrumentation support.

4.3 ENGINEERING, DESIGN AND SYSTEM DEVELOPMENT AREA

Under this area, the contractor shall accomplish the following types of support:

- develop recommendations and design approaches for measurement support system modification and improvement
- perform electronic, electrical, mechanical and structural engineering design efforts for in-water, on-water, sub-surface and shore-based test facilities, equipment, physical models, test vessels and platforms
- develop specifications and installation requirements
- conduct cost analyses and cost-design tradeoffs
- conduct hardware and software integration and performance evaluation
- perform interface engineering, and prepare design documentation

- perform system component fabrication/assembly, integration, installation and performance verification
- perform software design, modification and integration
- utilize and maintain ARD AUTOCAD systems
- prepare, update and maintain system documentation
- develop, implement and maintain a configuration plan and procedures for systems, equipment and models used in ARD tests, and
- other system development support.

4.4 DATA ACQUISITION, PROCESSING AND ANALYSIS AREA

Under this area, the contractor shall accomplish the following types of support:

- conduct test and experiment data collection
- operate, maintain and update analog and digital signal processing equipment, and analog to digital conversion systems
- conduct data stripping and processing
- measurement and support system calibration and certification
- process and validate test and experiment data
- prepare and validate data packages and support documentation
- support data interpretation
- prepare analysis results and documentation reports
- operate and maintain data recording and storage equipmnet, and
- other data and processing support

4.5 FACILITY, TEST FIXTURE, MODEL AND SYSTEM SUPPORT AREA

Under this area, the contractor shall accomplish the following types of support:

- support model operations and configuration changes
- apply and groom model treatments
- accomplish and document hull, mechanical and electrical configuration changes on pressure vessels including execution of certification systems
- develop and implement PMS systems for HM&E equipment
- operate, maintain and repair test platforms
- install, operate, calibrate, and repair data acquisition systems
- perform test equipment and device rigging
- perform welding, metal fabrication and machine shop operation
- fabricate, construct, assemble, integrate, install and demonstrate components, devices and systems to support test projects
- operate and maintain local area network equipment, and
- other system support

4.6 SPECIAL ANALYSIS AREA

Under this area, the contractor shall perform and document technological, mechanical, structural, hydrodynamic, acoustical, signal processing, program, logistic, environmental, facility and other analyses in support of test programs, test fixtures, facilities and other technical requirements.

NOTE: SECTIONS 5 THROUGH 13 APPLY TO ALL ASPECTS OF THE STATEMENT OF WORK.

5 WORK ATTRIBUTES

For all delivery orders issued under this contract, the contractor shall adhere to these aspects of work control, training and documentation:

5.1 SAFETY.

Ensure that all maintenance and operations are conducted with the HIGHEST regard for personnel and material safety. In this regard, the contractor shall provide a written company policy, which reflects and incorporates reference (E). [CDRL A005]

5.2 QUALIFICATIONS AND TRAINING.

Develop and maintain a qualified work force as described in references (B) and (D). Reference (D) describes the training and qualification to perform activities associated with Task I. In support of this requirement, the contractor shall provide and maintain a qualification and training plan for vehicle and data systems operations and maintenance personnel. This plan shall include training records and be available for periodic audit by the government. [CDRL A008] For Task II operations, the contractor shall identify and complete special training and planning prior to new test evolutions.

5.3 MAINTENANCE PROCEDURES.

Ensure that all Task I maintenance is accomplished with written procedures and commencement is authorized by the government (LSV CDE or DE) through written or verbal approval. Ensure that Task II maintenance is accomplished with appropriate procedures and commencement is authorized by the government (Project Engineer, Project Technician, Facilities Manager or Foreman) through written or verbal approval. Development of documentation prior to the conduct of maintenance ensures proper review of the action and forms a record of accomplishment and is applicable to future maintenance.

5.4 SECURITY.

Ensure all personnel are knowledgeable and adhere to the requirements of the ARD Security Manual, reference (F) and other applicable local instructions.

5.5 QUALITY ASSURANCE.

Establish a physical Quality Assurance (QA)/Quality Control (QC) program in accordance with references (C) and (J) and develop data QA/QC procedures for Task I maintenance. The contractor shall also conduct work using prescribed safety and quality assurance practices and procedures such as tag outs, two person inspection and

compartment closeouts per references (B), (C) and (N). [NOTE: These references may not specifically apply to Task II work.]

5.6 CERTIFICATION SYSTEM.

Ensure work within the certification boundary, reference (A), is fully documented (Re-entry control)

5.7 SMALL BOATS.

Require boat operators to complete the Idaho Safe Boating Correspondence course, reference (G), prior to boat operations.

5.8 OPERATING PROCEDURES.

Comply with the Operating Procedures, Emergency Procedures and Administrative Instructions of reference (B) during on-lake and in-barge operations for Task I. The government will provide specific procedures and instructions for tests and evolutions under Task II.

5.9 ACCOUNTING.

Ensure individual work hours and accomplishments are logged per project and work breakdown elements using a WBCA/WBLT or similar database. Reference (J) is the WBCA description.

5.10 CLEANLINESS.

Ensure that the cleanliness of spaces is routinely maintained such that a special cleanup for visitors is not normally required. Spaces requiring services include the office and labs listed in Section 10 (contractor spaces) and the LSVSB, support craft, supply areas and other work areas, barges, offices, and storage areas. [NOTE: The size of the spaces and frequency of visitors requires continuous cleanliness maintenance attention.]

5.11 DOCUMENTATION.

Computer products shall be documented in accordance with CDRL A003, Drawings shall adhere to CDRL A004.

6 PLACE OF PERFORMANCE

The contractor shall perform work on-site at the ARD, and off-site at contractor or sub-contractor and government facilities as required to accomplish delivery order tasks.

7 DOCUMENTATION

Documentation shall be provided by the contractor in accordance with the issued delivery orders.

8 GOVERNMENT FURNISHED INFORMATION/EQUIPMENT/MATERIAL

The government shall provide access to facilities, systems, equipment, system and equipment manuals and documentation, test equipment, tools and consumable materials to support work performed at the ARD. Specific GFM will be identified in individual delivery orders. Potential GFM is identified in reference (P).

9 CONTRACTOR FURNISHED MATERIAL

The contractor shall acquire material that is necessary to accomplish the work, whether on-site at the ARD or off-site, and which is not provided by the government as GFM. Specific contractor furnished material (CFM) requirements will be identified in individual delivery orders.

10 CONTRACTOR SPACES

In support of this SOW, specific spaces on-site at the ARD will be assigned to the contractor as GFM/GFE under issued delivery orders. The contractor's responsibilities for these spaces include cleanliness, physical security, information security, and safety in accordance with references (E) and (F). The spaces are:

Space/Location	Current Use
LSV Support Barge Contractor's Office	O&M Contractor Project Manager & Secretary
LSV Support Barge Mechanics Lab	Mechanic Lead, Planning, Records, hydraulic Lab
LSV Support Barge Electrical/Electronics Lab	Electronic and Electrical Maintenance
LSV Support Barge ODAS Lab	ODAS Configuration and Maintenance
LSV Support Barge Control Lab	Battery Charging Terminal, SCC Terminal, ODAS Terminal
LSV Support Barge Data Processing Lab	ODAS Data Reduction and Analysis
Radiated Noise Barge	RNDAAS Lab
Data Processing Trailers	Buoyant Vehicle Data
Building 1 Supply	LSV Supply and warehouse
Trailer (approx 30 x 50)**1**	ILS, Planning, Documentation
Trailer (approx 12 x 40)**1**	RNDAAS ILS, Planning, Documentation

1 NOTE: These trailers are currently leased by incumbent contractors for direct charged work for ARD projects. The "footprint" for these or similar temporary spaces will be available for contractor offices.

11 SECURITY

All contractor personnel performing work at the ARD are required to possess a SECRET clearance. Contractor personnel performing classified work at other locations are required to possess a clearance at the appropriate level. The highest level of clearance required is SECRET. Access to classified information at contractor and government facilities will be on a strict "need-to-know" basis. The ARD, including most contractor occupied spaces, is NOT authorized for open storage of classified material. The contractor shall ensure proper storage and safeguarding of classified material and personnel access in accordance with reference (F).

12 OTHER REQUIREMENTS

12.1 TECHNICAL INSTRUCTIONS

Performance under issued delivery order tasks will be subject to technical guidance provided in Technical Instructions as GFI from time to time by the Contracting Officer's Representative (COR). Such guidance will

generally take the form of equipment O&M schedules, priorities, and details that amplify delivery order tasks. The contractor shall respond immediately if he believes the Technical Instruction is tasking beyond the scope of the subject delivery order.

12.2 PROGRAM COORDINATION.

The contractor shall establish an on-site program management and coordination capability at the ARD in the form of a program manager. The program manager shall control the quality, completeness, and timeliness of all task completions and deliverables defined by delivery orders issued under the contract. The program manager shall organize contractor assets and personnel necessary to pursue task execution on a daily basis. This includes participating in providing technical guidance to the scientific community at the ARD with regard to measurement and processing system instrumentation implementation, data requirements, test planning, and other work in progress relating to task completion; generating high quality technical documentation on task completion; and contributing in discussions at scientific and contract meetings to disseminate information and results of experiments and instrumentation system functionality, as well as contract performance. The contractor's program management shall contribute in creating schedules, task planning, and coordinating with Government representatives and the COR for completion of delivery order tasks. Program coordination requires review and control of the contractor staff to ensure the most cost-effective use of resources.

12.3 ACCOUNTING AND WORK EFFORT TRACKING.

The contractor shall account for time and materials expended for each delivery order in accordance with a work breakdown structure for task areas and types of work, included in the delivery order. The delivery order will specifically identify the work breakdown structure for cost accounting. Monthly reports shall include a summary of current and cumulative expenditures for each delivery order, including labor hours (regular and overtime), cost of labor, cost of materials, travel expenditures, a delivery order subtotal, and the current and cumulative totals billed to the contract. The contractor shall administer the WBCA database (see reference (J)) for all personnel assigned to the contract. In addition, the contractor shall provide a monthly progress and status report for all active delivery orders.

12.4 HOLIDAYS

The contractor shall align company holidays for the onsite work force to government holidays. Work on holidays is not normally planned, but may be required subsequent to emergent system or program needs. Government Holidays are:

New Years Day (January 1st)
Martin Luther King Day, (also referred to as Civil Rights Day)
President's Day
Memorial Day
Independence Day (July 4th)
Labor Day
Columbus Day

Veteran's Day (November 11th)

Thanksgiving [NOTE 1: The day after Thanksgiving is not government holiday. However, every effort will be made by the government to adjust work requirements in order to offer the opportunity for leave for contractor personnel on this day.]

Christmas (December 25th)

NOTE 2: “Holiday” also includes any Federal Holidays declared after contract award by statute or Executive Order.

12.5 YEAR 2000 (Y2K) COMPLIANCE

The Contractor shall provide Y2K compliant information technology for such technology developed under this contract.

13 REFERENCES

The following documents referenced herein provide information necessary for the conduct of this statement of work. All references will be available to offerors upon request.

(A) LARGE SCALE VEHICLE REQUIREMENTS MANUAL (FOUO)
Location: ARD/Carderock

(B) *KOKANEE* Technical Policy Instructions, as defined by *KOKANEE* Technical Policy Instruction LSV-AI.000
Location: ARD/Carderock

(C) *KOKANEE* Craft Maintenance Plan
Location: ARD/Carderock

(D) *KOKANEE* and Related Systems Contractor Qualification Cards

(E) ARDSTAORD 5100.1 OCCUPATIONAL SAFETY AND HEALTH MANUAL

(F) ARDSTAORD 5530.1 Physical Security Plan for the ARD

(G) Idaho Boating Basics Regulations

(H) Military Standard Engineering Drawing Practices (DOD-STD-1000C), *for guidance only*,

(I) Sample Schedules

(J) Work Breakdown for Cost Accounting (WBCA) User Guide/System Description.

(K) RNB Calibration and PM Schedule (RNB-000050)

(L) Acoustic Measurement System Configuration Management Plan

(M) ARDSTAORD 4491.3 NSWC ARD Procurement Guide

(N) RNDAAS System Description

(O) RNDAAS Pretrial Procedure and Checklist (RNB-000060)

(P) List of Government Furnished Material for LSV Operations and Maintenance Contract (Inventory shall be incorporated into the contract at award)

(Q) Mil-Std 481B, Configuration Control, *for guidance only*

(R) Corrective Action Request/Report (CARR) Database (Annual Summary for FY96 and 97)

(S) User's Guide, ILSMIS 4.3, March 1997
(T) LSV ODAS System Description
(U) Example LSV Sensor Database
(V) ODAS Sensor Calibration Procedure
(W) *KOKANEE* Weight Control Program Description
(X) Data Processing System (DPS) Description
(Y) Sensor Configuration Management Plan
(Z) Naval Facilities Engineering Command, Management of Weight Handling Equipment, P-307, October 1996

14 GLOSSARY OF TERMS

The following definitions and descriptions are provided to clarify the understanding of terms used within this SOW.

ARD- Acoustic Research Detachment

ATACS- Acoustic Tracking And Communication System. This system includes components on-board *KOKANEE,* on the lake bottom and on the Radiated Noise Barge. It is used for underwater navigation and communication of the *KOKANEE.*

Auditable- Records or documents that can be compared to a standard for completeness, accuracy and conformity.

Availability- A vehicle condition such that the vehicle will be ready to execute an underway and range trial in accordance with the *KOKANEE* Schedule. This may include being ready for other more subtle trials as defined by the *KOKANEE* Schedule

CDE- Command Duty Engineer. This is an LSV watch position filled by government personnel upon completing specific qualifications. The CDE is assigned for all underway tests and in barge wet tests.

CDRL- Contract Data Requirements List

CFM- Contractor Furnished Material

COR- Contracting Officer's Representative

DE- Duty Engineer. This is an LSV watch position filled by government personnel upon completing specific qualifications. The DE is assigned daily, in-port to coordinate maintenance, repairs and project test preparations. Underway, the DE executes the underway procedure to accomplish the trail objectives.

DCBR- Design Certification Baseline Report. This is a configuration control document for the RNDAAS.

DPS- Data Processing System lab. This lab processing LSV on-board acoustic data.

Emergent- Any unanticipated condition that has emerged as a result of test data, material delivery dates, *KOKANEE* Schedule, unexpected failures, etc. This does not refer to a condition that necessarily requires emergency attention (though an emergent condition may require emergency attention depending on the criticality of the condition).

Entry- Accessing any *KOKANEE* on-board system or component that involves: removing a cover, disassembly or removal of any component, breaking a make & break cable connection, cutting any wires or leads, threatening the integrity of the component or system through the application or potential application of power, heat, cooling or undue force or shock.

GFE/I/M- Government Furnished Equipment/Information/Material

GFY- Government Fiscal Year (10/1-9/30)

GNC- Guidance, Navigation and Control. This is a suite of computers and associated software that enable autonomous operations of *KOKANEE.*

HME&CC- All hull, mechanical and electrical (HME) components and systems on *KOKANEE*; all electronic and microprocessor components, assemblies, interfaces and wiring of the submarine command & control (C2) systems, located in various locations on the submarine and off-hull; various supporting command & control software.

KCE- *KOKANEE* Chief Engineer. This is a government position assigned by the Commander, NSWCCD. The KCE is responsible for operations, maintenance and safety of personnel and equipment for the LSV Program.

ISMS- Intermediate Scale Measurement System: A test range on Lake Pend Oreille located generally north of the *KOKANEE* range.

ILS- Integrated Logistic Support: Nominally defined as providing material, engineering administration, configuration control support of the *KOKANEE* engineering support services effort.

KOKANEE Schedule- Definition of the program tests required to be conducted by *KOKANEE*. Includes implicit requirements to prepare for and be able to support tests not accomplished due to emergent failure or weather as soon as possible after an aborted underway. The *KOKANEE* Schedule will be published at least once a quarter, however the schedule is dynamic and change should be anticipated.

LFHB- Large Floating Hoist Barge, otherwise known as the Yellow Barge. This barge is normally located in the center of Scenic Bay. It can be seen from the shoreline. The LFHB has two 100 ton lift cranes which can be used to let-down *KOKANEE* to a submerged position to meet infrequent trial or utilization requirements.

LSV- Large Scale Vehicle, *KOKANEE,* an unmanned, self-propelled, 1/4 scale submarine, that is approximately 10 feet in diameter, 90 feet long and displaces 150 tons submerged. The *KOKANEE* mission is to support hydrodynamic, acoustic, and structural Research, Development, Test and Evaluation (RDT&E) of subsea technology for the Navy.

LSV Crew Member- A government or contractor employee who has completed specific qualifications for operations and maintenance on the *KOKANEE.*

LSVSAFE- All components defined within the boundary that is considered critical to the SAFETY OF THE VEHICLE TO RECOVER from a critical or severe failure while operating on the lake. Also includes the philosophy and maintenance process control that is applied to the systems within this boundary when work is required.

LSVSB- The LSV Support Barge. This barge provides industrial support for LSV operations and maintenance activities.

MSP- Model Support Platform. This is a floating model lift and maintenance platform.

MDS- Maintenance Data System. This is a database of *KOKANEE* maintenance requirements and periodicities.

NSWCCD- Naval Surface Warfare Center, Carderock Division

ODAS- The On-board Data Acquisition System (previously, the On-board Instrumentation System - OIS). Includes all sensors, cabling, filter assemblies, processors, recording system, the ODAS control computer with resident software and any other supporting interfaces installed on *KOKANEE* to support the acquisition of test data for off-line trials performance analysis.

O&M- Operation And Maintenance

Pedigree- Certification (paper document) by a certified authority that the component is indeed the appropriate component made of the documented materials from foundry to implementation.

PMS- Preventive Maintenance System. This is a systematic approach to maintenance that services equipment prior to failure to extend service life and reduce costs.

POA&M- Plan Of Action And Milestones

Policy Instructions- These are the instructions included within references (A) through (C) that provide Process Control Definition. Specifically these documents define the process or methodology for controlling the conduct of work such as calibrations, system isolation for entry, re-entry into LSVSAFE certified systems, undocking, underway operations, etc.

Procedures- These are written and developed procedures for the conduct of maintenance on *KOKANEE* and interfacing systems. Nominally includes any equipment within the Support Barge area, control lines and signals, and structural support systems, propeller removal hardware, Synchrolift, barge ballast tanks, catwalks, cranes).

R&D- Research And Development

SCC- Ship Control Computer. This is a computer on-board the *KOKANEE* that hosts the Autonomous Control Software program. The SCC directs underway operations in accordance with the program and operator commands.

RDT&E- Research, Development, Test And Evaluation

RNB- Radiated Noise Barge

RNDAAS- Range Noise Data Acquisition and Analysis System, equipment located on the lake and instrumentation located within the Radiated Noise Barge used for the acquisition of data in the real- time

SET- Systems Engineering Team

SOW- Statement of Work

Support Barge- See LSVSB

Support Facilities- All program assets located on-site to support operations, maintenance and integrated logistics support. These include, but are not limited to the LSV Support Barge, the LSV Tender, The Radiated Noise Barge (HM&E only), several small craft dedicated to the LSV program and work spaces at ARD which are assigned to the LSV program. The ATACS system ,including the submerged buoys on the lake, is not considered part of the Support Facilities, but part of the *KOKANEE* vehicle systems due to its C2 role in operating the vehicle and the subsequent controls required in maintenance and operation of this system.

WBLT/WBCA. Work Breakdown for Labor Tracking/Work Breakdown for Cost Accounting. WBLT/WBCA are synonymous. This is a PC based database which tracks actual hours worked, work accomplished and project billed on a daily basis.